



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/677,895	10/02/2003	Masaki Kameyama	3531.68507	9667

7590 04/22/2005

Patrick G. Burns, Esq.
GREER, BURNS & CRAIN, LTD.
Suite 2500
300 South Wacker Dr.
Chicago, IL 60606

EXAMINER

DAVIS, DAVID DONALD

ART UNIT

PAPER NUMBER

2652

DATE MAILED: 04/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/677,895

Applicant(s)

KAMEYAMA, MASAKI

Examiner

David D. Davis

Art Unit

2652

/

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 December 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) 7 and 8 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 9-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 10/2/03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Claims 7 and 8 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim.

Election was made **without** traverse in the reply filed on 12/02/2004.

2. Applicant's election of claims 1-6 and 9-14 in the reply filed on 12/02/2004 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Information Disclosure Statement

3. Receipt is acknowledged of the Information Disclosure Statement (IDS) received October 2, 2003.

Specification

4. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

Art Unit: 2652

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Higashiya et al (JP 06-012807). As per claim 1, Higashiya et al shows in figure 1 a head slider 10 having an air inlet end and an air outlet end. Slider 10 includes a rail 11 having a flat air bearing surface for generating a floating force when the disk rotates. The rail 11 is disposed on a disk-facing surface, and an electromagnetic transducer disposed near the air outlet end where the rail 11 is positioned. The head slider 10 has a cavity 1 on the air outlet end near the electromagnetic transducer.

As per claim 2, Higashiya et al shows in figure 1 the cavity 1, which has a curved surface. Higashiya et al discloses that the depth of the cavity is between 10 - 50 μm , i.e. the depth of the cavity flows from approximation represented by: $z=f(x) \bullet g(y)$ where z represents the depth of the cavity 1, x represents the position thereof in the longitudinal direction of the head slider 10, and y represents the position thereof in the transverse direction of the head slider 10. As per claim 3, Higashiya et al discloses that the depth of the cavity is between 10 - 50 μm , i.e. the cavity 1 is approximated by a curved surface which is represented by an equation which is similar to the equation except that at least one of $f(x)$ and $g(y)$ is replaced with a sine function.

As per claims 4 and 5, Higashiya et al shows in figure 1 a portion of the head slider 10 that project from a disk-facing surface when a predetermined voltage is applied to the electromagnetic transducer. As the claims are directed to a head slider, per se, the method limitations appearing in line 2 of claim 4 has only been accorded weight to the extent that it affects the structure of the completed head slider. Note that "[d]etermination of patentability in

Art Unit: 2652

'product-by-process' claims is based on product itself, even though such claims are limited and defined by process [i.e., "removing a portion of the head slider"], and thus product in such claim is unpatentable if it is the same as, or obvious form, product of prior art, even if prior product was made by a different process", *In re Thorpe, et al.*, 227 USPQ 964 (CAFC 1985).

Furthermore, note that a "[p]roduct-by-process claim, although reciting subject matter of claim in terms of how it is made [i.e., "removing a portion of the head slider"] is still product claim; it is patentability of product claimed and not recited process steps that must be established, in spite of fact that claim may recite only process limitations", *In re Hirao and Sato*, 190 USPQ 685 (CCPA 1976).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 6 and 9-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Furuishi et al (US 5,550,693) in view of Higashiya et al (JP 06-012807). As per claims 6, 9 and 14, Furuishi et al shows in figure 2 a head slider 21 having an air inlet end and an air outlet end. Slider 21 includes a front rail 29 disposed on a disk-facing surface adjacent to the air inlet end and having a flat air bearing surface for generating a floating force when the disk rotates. Figure 2 also shows a pair of rear rails 36 & 37 disposed on the disk-facing surface adjacent to the air outlet end and each having respective flat air bearing surfaces for generating a floating force

Art Unit: 2652

when the disk rotates. Figure 2 additionally shows a groove 22 defined downstream of the front rail 29 for expanding air once compressed by the front rail 29 to develop a negative pressure.

Further shown in figure 2 is a plurality of pads 33 disposed on the front rail 29 and at least one pad 49 of said pair of rear rails 36 & 37.

Furuishi et al is silent, however, as to the head slider having a cavity on the air outlet end near the electromagnetic transducer 35.

Higashiya et al shows in 1 the head slider 10 having a cavity 1 on the air outlet end near the electromagnetic transducer. Higashiya et al shows in figure 1 the cavity 1, which has a curved surface. Higashiya et al discloses that the depth of the cavity is between 10 - 50 μm , i.e. the depth of the cavity flows from approximation represented by: $z=f(x) \bullet g(y)$ where z represents the depth of the cavity 1, x represents the position thereof in the longitudinal direction of the head slider 10, and y represents the position thereof in the transverse direction of the head slider 10. Higashiya et al discloses that the depth of the cavity is between 10 - 50 μm , i.e. the cavity 1 is approximated by a curved surface which is represented by an equation which is similar to the equation except that at least one of $f(x)$ and $g(y)$ is replaced with a sine function.

Higashiya et al shows in figure 1 a portion of the head slider 10 that project from a disk-facing surface when a predetermined voltage is applied to the electromagnetic transducer. As the claims are directed to a head slider, per se, the method limitations appearing in line 2 of claim 4 has only been accorded weight to the extent that it affects the structure of the completed head slider. Note that "[d]etermination of patentability in 'product-by-process' claims is based on product itself, even though such claims are limited and defined by process [i.e., "removing a portion of the head slider"]", and thus product in such claim is unpatentable if it is the same as, or

Art Unit: 2652

obvious form, product of prior art, even if prior product was made by a different process", *In re Thorpe, et al.*, 227 USPQ 964 (CAFC 1985). Furthermore, note that a "[p]roduct-by-process claim, although reciting subject matter of claim in terms of how it is made [i.e., "removing a portion of the head slider"] is still product claim; it is patentability of product claimed and not recited process steps that must be established, in spite of fact that claim may recite only process limitations", *In re Hirao and Sato*, 190 USPQ 685 (CCPA 1976).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide the slider of Furuishi et al with a cavity as taught by Teruyoshi et al. The rationale is as follows: one of ordinary skill in the art at the time the invention was made would have been motivated to provide a slider with a cavity so as to catch "dust entering between a magnetic head slider and magnetic disk". See the Abstract of Teruyoshi.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David D. Davis whose telephone number is 571-272-7572. The examiner can normally be reached on Monday thru Friday between 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoa T. Nguyen can be reached on 571-272-7579. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2652

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


David D. Davis
Primary Examiner
Art Unit 2652

ddd